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Key User Knowledge, Attitude and IT Performance: The Moderating Effect of Organizational Culture

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Abstract

Key user behavior has important effect on departmental IT performance. However, little is known about the moderating effect of organizational culture on the relationship between the key user knowledge, attitude and departmental IT performance. Hierarchical Linear Modeling (HLM) was conducted to test the moderating effect. The results showed that in an organization with stronger IT application culture, key user knowledge will have more effect on departmental IT performance, and attitude will have less effect on departmental IT performance. Implications of the results are discussed.

Keywords: Organizational Culture; Key user; Knowledge; Attitude; IT Performance

1. Introduction

IT investment has increased significantly in organizations during the past two decades. However, the rate of IT project failure remains quite high. This phenomenon provoked many research focused on the key effect factors of IT performance [1]. Past research showed that key users play important roles in IT application, and their behaviors will affect the departmental IT performance[2].

As most of the companies consist of different departments, if departments can not gain IT performance, the company as a whole may be difficult to gain IT performance. Therefore, the current research focuses on the departmental IT performance. Past research showed that IT performance can be assessed from an economic, financial, behavioral or perceptual perspective [3-5]. In the present research,

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perceptual view is adopted. Departmental IT performance refers to the improvement of operational effectiveness of department due to IT application, and is assessed from the users' point of view.

In the organizational behavior research field, researchers postulated that organizational culture plays a key role in determining the organizational performance [6]. Organizational culture refers to the deeper level of basic assumptions and beliefs that are shared by members of an organization, that operate unconsciously, and that define in a basic 'taken for granted' fashion of an organization view of itself and its environment. These assumptions and beliefs are learned responses to a group's problems of survival in its external environment and its problems of internal integration [7]. Organization culture influences the behavior of organizational members, and encourages the behaviors that support the organization's intended strategy[8]. Organizational culture will influence the relationship of individual behavior to performance[9].

From department perspective, Huang and Wong found that key users' behavior will affect the successful application of IT at the department level [3, 10]. In organizational behavior research field, performance has been researched more often from ability, motivation and organization perspectives. Job performance is determined by ability and motivation [11]. Both of motivation and attitude can measure one's willingness to perform a particular behaviour [9]. Past research showed that knowledge has become a strategic resource for an organization, as the only certainty is uncertainty, and sure source of lasting competitive advantage is knowledge[12, 13]. Therefore, in the IT application context, it is important to emphasize the role of key user knowledge and attitude in the IT performance. Although there are some research focused on the role of key users, the research about how to play the role of key users are still limited.

By applying the organizational culture theory, the present study tries to analyze the moderating effects of the company culture on the relationship between key user knowledge, attitude and departmental IT performance, and then shows how to play the role of key users by fostering appropriate IT application culture.

2. Hypotheses

Individual behavior is influenced by his/her environment, and the organizational characteristics is particularly prominent[12, 14]. Culture is the pattern of basic assumptions that a given group has invented, or developed in learning to cope with its problems of external adaptation and internal integration, and has worked well enough to be considered valid, and to be taught to organizational members to perceive, think, and feel in relation to those problems[15]. There are two common characteristics of behavior patterns in organizations. First, the behavior is group-wide, which indicates that there are norms, expectations, rewards, and consequences supporting certain behavior and extinguishing other behavior. Second, the behaviors are value-driven, which implies that there are an underlying set of beliefs and assumptions that enable the behavior and represent the most important values in the organization. Individuals change behavior if they see a desired outcome[16, 17]. Therefore, organizational culture has important influence on the individual behavior. Organizational culture affects individual behavior by individual perception and feeling, by teaching individuals the correct way to perceive, think, and feel in relation to the problems concerned, and by telling individuals what the most important values in the organization are. Organizational culture can facilitate or hinder specific types of behavior. For example, if a firm creates a culture that supports innovation, employees will be encouraged to experiment and take risks, approach problems in a new way, and then facilitate their innovation behavior. On the other hand, in an organization where the culture does not support innovation, doing things in the old-fashioned way will be predominant[18]. Additionally, past research showed that a positive organizational culture could lead to increased employee productivity and increased organizational effectiveness[19, 20], and organizational culture is a vital factor to an organization's ability to create value through leveraging knowledge assets[12,

21, 22], that is, organizational culture is helpful in reaching a high level of efficiency in applying knowledge[23]. Therefore, in IT application context, the following hypotheses are proposed:

Hypothesis 1: Organizational culture will moderate the relationship between the key user knowledge and departmental IT performance.

Hypothesis 2: Organizational culture will moderate the relationship between the key user attitude and departmental IT performance.

3. Empirical study

To test the above hypotheses, data are collected from 42 companies in China. In every company, one top manager is solicited to fill the organizational culture questionnaire and find some key users to fill the department level questionnaire. Finally the valid questionnaires collected are 283 key users, which consists the sample of this study. The key advantage of this sampling process is the personal relationships between the top managers and the respondents.

To use the well-established and accepted scales can provide high convergent and discriminant validity[24]. The response format for all the measurement items in this study is a 5-point Likert-type scale ranging from strongly disagree (1) to strongly agree (5).

The scale of organizational culture is drawn from previous research [25], and modified according to the research context. The scale consisted 4 items. An example item being, "Innovation is encouraged in our company". This scale is completed by the top management in the 42 companies. The internal consistency reliability is .78.

The scale of the departmental IT performance is drawn from the previous research[25], and modified according to the present research context. The scale consists 18 items. An example item being, "The use of IT has led to better management of department activities". This 18-item scale is completed by the key users in the sample. The internal consistency reliability is .95.

The scale of the knowledge is drawn from the previous research, and modified according to the author's interview with some IT application experts[3, 26, 27]. 5 items are developed to measure the key user knowledge about IT application. An example item being, "I know which type of IT system will improve the efficiency of the work in my department". This scale is completed the key users in the sample. The internal consistency reliability is .89.

The scale of attitude is adopted from the previous research, with modifications according to the present research context[3, 28, 29]. The scale consists of 4 items. An example item being, "It is wise for my department to apply IT". This scale is completed by the key users in the sample. The internal consistency reliability is .90.

As the scales in the present research are from the previous research, Confirmatory Factor Analysis (CFA) is conducted to ensure the items adopted for departmental IT performance, key user knowledge and attitude are appropriate. As the model in present study involves cross-level variables (i.e., department and company), Hierarchical Linear Modeling (HLM) is conducted to test the hypotheses.

4. Results

A minimum of three indicators for each construct is recommended in structural equation modeling research[30]. As stated above, there are 18 items in the departmental IT performance scale, and 5 items in the key user knowledge scale. If each item is used as an indicator, there are too many indicators comparing with the small sample. To reduce the number of indicators of departmental IT performance and key user knowledge, an approach recommended by previous research[31] is used. First, exploratory factor analyses are conducted for the items of each construct. Second, the items with the highest and lowest loadings are combined by averaging until three aggregated indicators are yielded. CFA is then

conducted to test the factor structure of the three department-level constructs (i.e., departmental IT performance, key user knowledge and attitude) using the data reported by key users.

The fit of the three-factor model appears to be acceptable (χ^2=47.80;df=32; RMSEA=0.042;CFI=0.99,NNFI=0.99) and the single-factor model has poor fit (χ^2=1232.67; df=35; RMSEA=0.35; CFI=0.61, NNFI=0.49). Thus, together with the above high reliability evidence, it can be concluded that the scales are appropriate for the measurement of relative constructs in the current study. Therefore, the hypotheses are tested in the following steps.

One prerequisite about testing the cross-level interactions is that there are significant random variances in the slope-as-outcome models estimated. The results of HLM analysis are shown in Table 1. It shows that both key user knowledge-departmental IT performance slope and key user attitude-departmental IT performance slope have significant random variances (τ1=0.06, P<0.01; τ2=0.04, P<.05), which imply that there are significant variability in the level 1 key user knowledge-departmental IT performance relationship and level 1 key user attitude-departmental IT performance relationship across companies. Then whether these variances can be explained by company-level factor (i.e., organizational culture) is examined. The results show that organizational culture has positive effect on the key user knowledge-departmental IT performance slope (γ=0.11, p<.05), and has negative effect on the key user attitude-departmental IT performance (γ= -0.08, p<.1). Therefore, Hypothesis 1, 2 are all supported.

Table 1. Results of HLM analysis

Variable	Department-Level Predictors	Adding Company-Level Variable
Intercept	1.34^{***}	
Knowledge	$0.34^{***}(0.06^{**})$	0.11^{*}
Attitude	$0.20^{***}(0.04^{*})$	-0.08^{+}

Notes: Criterion variable is departmental IT performance. Entries are coefficient estimations of the fixed effects (γ) with robust standard errors. Random variance components (τ) are in parentheses. $^{+}$p<0.1; *p< .05; **p <.01;***p<.001. One-tailed tests.

5. Discussion

Key users play important roles in IT application. However, the research about how to play the important roles of key users is still limited. Using a sample of 283 key users from 42 companies, by conducting HLM analysis, the current study empirically tests the moderating effect of organizational culture on the relationship between key user knowledge and departmental IT performance, and the relationship between key user attitude and departmental IT performance. The results show that in companies with stronger IT application culture, key user knowledge will have more effect on departmental IT performance, and key user attitude will have less effect on departmental IT performance. Therefore, the current research deepens previous research about the roles of key users in IT application.

Previous research showed that the effect factors of IT performance in different IT application stages are dynamic[1, 32]. The current study provides empirical evidence to the dynamic effect of key user knowledge and attitude on departmental IT performance. That is, in the company with more appropriate IT application culture, key user knowledge will play more important role to the improvement of departmental IT performance. However, key user attitude will play less important role to the improvement of departmental IT performance. Therefore, the present study enriches existing research about the dynamics of effect factors of IT performance.

Results of the current research have some practical implications. It shows that organizational culture has positive moderating effect on the relationship between key user knowledge and departmental IT performance. This implies that it is important for the IT application companies to foster appropriate culture to play the role of key user. In the company with more appropriate IT application culture, it is more important to improve key users' knowledge. And in the company with more appropriate IT application culture, key user knowledge will be more important to improve IT performance. Past research

showed that well-managed organizations are characterized by a strong culture[12, 14]. Therefore, in the company with well-managed IT application, it is necessary to pay more attention to the improvement of key user knowledge.

The results show that organizational culture will have negative moderating effect on the relationship between key user attitude and departmental IT performance. One reasonable explanation is that in the company with stronger IT application culture, most of the key users have positive attitude toward IT application, therefore, the effect of attitude on departmental IT performance will become weaker.

Past research showed that knowledge is one of the most important job competencies, and is relatively easy to be developed by training[27]. The results of the current study imply that it is important to train key users about IT application knowledge continually during the whole IT application process.

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References

[1] Rosacker KM, Olson DL. Public Sector Information System Critical Success Factors. *Transforming Government: People, Process and Policy*; 2008, 2 (1): 60-70.

[2] Yang HL, Tang JH. Key User Roles on Web-based Information Systems Requirements. *Industrial Management & Data Systems*; 2005, 105 (5): 577-595.

[3] Huang M, Wong CS. The Effects of Top Management Support, Department Manager Knowledge and Attitude on Departmental IT Success. *Working Paper*; 2011.

[4] Molla A, Licker PS. E-commerce Systems Success: An Attempt to Extend and Respecify:The Delone and Maclean Model of IS Success. *Journal of Electronic Commerce Research*; 2001, 2 (4): 131-141.

[5] Delone WH, Maclean ER. Information System Success: The Quest for the Dependent Variable. *Information Systems Research*; 1992, 3 (1): 60-95.

[6] Cooper KJ. *Creating Culture and Climate in a Start-up Company: An Organizational Development Plan*. Doctoral Dissertation, California School of Professional Psychology; 1997.

[7] Schein EH. *Organizational Culture and Leadership*. San Francisco: Jossey-Bass; 1985.

[8] Cabrera EF, Bonache J. An Expert HR System for Aligning Organizational Culture and Strategy. *Human Resource Planning*; 1999, 22 (1): 51-60.

[9] Blumberg M, Pringle CC. The Missing Opportunity in Organizational Research: Some Implications for a Theory of Work Performance. *Academy of Management Review*; 1982, 7 (4): 560-569.

[10] Huang M, Wong CS. First-line and Middle Manager Competence, Usage Intention, and IT Application Maturity. *International Journal of Innovation, Management and Technology*; 2010, 1 (4): 349－353.

[11] Vroom V. Work and Motivation. New York: Wiley; 1964.

[12] Zheng W. The Impact of Organizational Culture, Structure, and Strategy on Knowledge Management Effectiveness and Organizational Effectiveness. Doctoral Dissertation, University of Minnesota; 2005.

[13] Nonaka I. The Knowledge-creating Company. *Harvard Business Review*; 1991, (6): 96-104.

[14] Peters TR. Waterman. *In Search of Excellence*. New York: Harper and Row; 1982.

[15] Schein EH. Coming to a New Awareness of Organizational Culture. *Sloan Management Review*; 1984, 25 (2): 3-16.

[16] Beer M, Eisenstat RA, Spector B. Why Change Programs Don't Produce Change. *Harvard Business Review*; 1990, 68 (6): 158-166.

[17] Magee KC. The Impact of Organizational Culture on the Implementation of Performance Management. Doctoral Dissertation, Georgia State University; 2002.

[18] Durcikova A. The Role of Oranizational Climate in the Use of Knowledge Management Systems to Support Problem-solving Doctoral Dissertation, University of Pittsburgh; 2004.

[19] Hsu CH. A Structural Equation Modeling Analysis of Transformational Leadership, Organizational Culture and Organizational Effectiveness in Taiwanese Sport/Fitness Organizations. Doctoral Dissertation, United States Sports Academy; 2002.

[20] Lim JY, Cromartie F. Transformational Leadership, Organizational Culture and Organizational Effectiveness in Sport Organizations. The Sport Journal; 2001, 4 (2): 1-4.

[21] Cole-Gomolski B. Users Loath to Share Their Know-how. *Computerworld*; 1997, 31 46-52.

[22] Ruggles R. The State of the Notion: Knowledge Management in Practice. *California Management Review*; 1998, 40 (3): 80.

[23] Brockman BK, Morgan RM. The Role of Existing Knowledge in New Product Innovativeness and Performance. *Decision Sciences*; 2003, 34 (2): 385-419.

[24] David DJV. Adaptive Learning Systems Technology Advisor: A model for business entrepreneurs to implement IT. Doctoral Dissertation, The City University of New York; 2004.

[25] Xiao J. Research on IT Application Maturity and Critical Success Factors in Mainland Enterprises. Doctoral Dissertation, San Yat- Sen University; 2007.

[26] Boyatzis RE. The Competent Manager: A Model for Effective Performance. New York: Wiley; 1982.

[27] Spencer LM, Spencer SM. Competence at Work:Models for Superior Performance. New York: Wiley; 1993.

[28] Myers BL. Moving beyond Computer-based Information Technology: A Comparison of the Technology Acceptance Model with the Theory of Reasoned Action and the Theory of Planned Behavior in an Industry Specifications Context. Doctoral Dissertation, New York University; 2004.

[29] Grandon EE. Extension and Validation of the Theory of Planned Behavior: the Case of Electronic Commerce Adoption in Small and Medium Sized Businesses in Chile. Doctoral Dissertation, Southern Illinois University Carbondale; 2005.

[30] Bollen KA. Structural Equations with Latent Variables. New York: Wiley; 1989.

[31] Mathieu JE, Hofmann DA, Farr JL. Job Perception-job Satisfaction Relations: An Empirical Comparison of Three Competing Theories. *Organizational Behavior and Human Decision Processes*; 1993, 56: 370-387.

[32] Nah FFH, Delgado S. Critical Success Factors for Enterprise Resource Planning Implementation and Upgrade. *Journal of Computer Information Systems*; 2006, 46 (5): 99-113.